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10/568,985	02/21/2006	Yukihiro Morita	504780100	3592

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EXAMINER	
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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,985	MORITA ET AL.	
	Examiner	Art Unit	
	ARLEEN M. VAZQUEZ	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,13,14 and 26-35* is/are pending in the application.

4a) Of the above claim(s) *32-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,13,14 and 26-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 April 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 32-35 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Invention of claim 32 is directed to a measurement system for evaluating the potential performance of a protecting layer on a plasma display panel (PDP) substrate comparing the output value with a predetermined threshold value that differs from previously examined claims that do not comprises evaluation of layer on a plasma display panel (PDP) substrate.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 32-35 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Limitation of "Configured to"

2. Regarding claims 1,3-5 and 7-10 it has been held that the recitations that an element is "adapted to" or "configured to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison, 69 USPQ 138.*

For example in claim 1, the limitation of "an ion irradiating unit *configured to* apply a negative..." can be changed to "an ion irradiating unit *applying* a negative…" and "a voltage applying unit configured to measure..." can be changed to "a voltage applying unit measuring...". Similar changes will be considered as positive limitations.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 5-8 are rejected under 35 U.S.C. 102 (b) as being anticipated by ***Larson et al. (US 5,315,113).***

As to claims 5 and 6, ***Larson et al.*** discloses in Figure 1 an insulating film measuring device (10) for evaluating properties of an insulating film (12, see abstract), the insulating film measuring device comprising an ion irradiating unit (98) configured to irradiate the insulating film (12) with ions (100); and a spectrum measurement unit (88) configured to measure a spectrum of secondary electrons emitted from the insulating film (12) after ion irradiation has stopped (ion gun 98 can be operated by pause and pulses or continuously, Col. 9 lns 7-12), wherein the spectrum measurement unit (88) measures, over time, the spectrum of secondary electrons (SED) emitted from the insulating film (12).

Regarding claims 7 and 8 it appears the insulating measuring device performs a series of detections such as to detect an amount of variation in a peak, to detect intensity of a peak, to determine energy difference, using the same unit which is disclosed as "analyzing device 200" which can be interpreted as being a computer (data processor) in communication with insulating film. ***Larson et al.*** comprises a processor

76 which can be, as mentioned above, configured to perform these types of detections and measures.

As to claims 7 and 8, ***Larson et al.*** discloses in Figure 1 a processor 76 including analyzing portion 74 which include a variation detection unit and an intensity detection unit configured to detect, based on a secondary electron measurement result (SED) measured over time by the spectrum measurement unit (88), an intensity and a variation in a peak appearing at a lower energy level that the peak due to kinetic emission of secondary electrons (secondary electrons emitted by insulating film have a lower energy level due to their kinetic energy because the electrons loose energy levels when they are reflected from the insulating film to the spectrum measurement unit, therefore is possible for the variation detection unit to detect a variation based on the energy level and the kinetic emission and for the intensity detection unit to detect the intensity based in the energy).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4,9-10,13 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Larson et al. (US 5,315,113)*** in view of ***Wada et al. (US 5,723,367).***

As to claims 1-2,9,13 and 26, ***Larson et al.*** discloses in Figure 1 an insulating film measuring device (10) for evaluating properties of an insulating film (12, see abstract), the insulating film measuring device comprising an ion irradiating unit (98) configured to irradiate the insulating film (12) with ions (100); and a spectrum measurement unit (88) configured to measure a spectrum of secondary electrons (emitted from the insulating film (12) during ion irradiation and/or ion irradiation has stopped (ion gun 98 can be operated by pause and pulses or continuously, Col. 9 lns 7-12), wherein the spectrum measurement unit (88) measures, over time, the spectrum of secondary electrons (SED) emitted from the insulating film (12). ***Larson et al.*** fails to teach a voltage applying unit configured to apply a negative voltage to the insulating film during ion irradiation. However, ***Wada et al.*** discloses in Figure 1E and 2 a voltage applying unit (2 and 3) configured to apply a negative voltage to the insulating film (11,12).

It would have been obvious for one ordinary skill in the art at the time the invention was made to modify the teachings of ***Larson et al.*** by having a voltage applying a negative voltage to it as taught as ***Wada et al.*** to avoid electrical interference between the other elements of the measuring device.

Regarding claims 3 and 4 it appears the insulating measuring device performs a series of detections such as to detect an amount of variation in a peak, to detect intensity of a peak, to determine energy difference, using the same unit which is disclosed as "analyzing device 200" which can be interpreted as being a computer (data processor) in communication with insulating film. ***Larson et al.*** comprises a processor

76 which can be, as mentioned above, configured to perform this types of detections and measures.

As to claims 3 and 4, ***Larson et al.*** discloses in Figure 1 a processor 76 including analyzing portion 74 which include a variation detection unit and an intensity detection unit configured to detect, based on a secondary electron measurement result (SED) measured over time by the spectrum measurement unit (88), an intensity and a variation in a peak appearing at a lower energy level that the peak due to kinetic emission of secondary electrons (secondary electrons emitted by insulating film have a lower energy level due to their kinetic energy because the electrons loose energy levels when they are reflected from the insulating film to the spectrum measurement unit, therefore is possible for the variation detection unit to detect a variation based on the energy level and the kinetic emission and for the intensity detection unit to detect the intensity based in the energy).

As to claim 10, ***Larson et al.*** discloses in Figure 1 a processor 76 including analyzing portion 74 which include a determining unit configured to determine, after ion irradiation has stopped (by unit 102), based on the spectrum measured (SED) by the spectrum measurement unit (88), an energy difference between a first peak due to kinetic emission of secondary electrons measured during ion irradiation and a second peak appearing at a lower energy level than the first peak (With each irradiation of ions to the insulating film, the thickness of the film varies, therefore each irradiation of electrons will have and amount of energy different from the other, and this will be represented by a graph in the monitor 78 showing a difference between secondary

electrons based on time and kinetic energy allowing to determine a change in energy by comparing their peaks).

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over ***Larson et al. (US 5,315,113)*** in view of ***Wada et al. (US 5,723,367)*** further in view of ***Nakanishi et al. (US 5,834,791).***

As to claim 14, the combination of ***Larson et al.*** and ***Wada et al.*** discloses everything above but fails to teach the electron density of states is measure in valence bands of the insulating film. However, ***Nakanishi et al.*** in Figure 3 the electron density of states is measure in valence bands (Graph of Figure 3 shows how the energy of the electrons are represented by valence bands, Col. 9 ln 64- Col. 10 ln 8) of the insulating film (16).

It would have been obvious for one ordinary skill in the art at the time the invention was made to modify the combined teachings of ***Larson et al.*** and ***Wada et al.*** by having the density of the electrons measure in valence bands as taught as ***Nakanishi et al.*** to allow graphic representation of the electrons.

8. Claims 27 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Larson et al. (US 5,315,113)*** in view of ***Wada et al. (US 5,723,367)*** further in view of ***Hamamura et al. (US 6,303,932).***

As to claims 27 and 30, the combination of ***Larson et al.*** and ***Wada et al.*** discloses everything above but fails to teach means for applying a vacuum to the insulating film during the measurement of the spectrum of secondary electrons and

wherein the ion irradiating unit irradiates argon ions. However, ***Hamamura et al.*** discloses in Figure 1 means (5) for applying a vacuum to the insulating film (7) during the measurement of the spectrum of secondary electrons (8) and wherein the ion irradiating unit (2) irradiates argon ions (Col. 14 lns 18-22).

It would have been obvious for one ordinary skill in the art at the time the invention was made to modify the combined teachings of ***Larson et al.*** and ***Wada et al.*** by having a vacuum applied to the insulating film as taught as ***Hamamura et al.*** to avoid damage to the film and at the same time to secure the film to be tested.

As to claims 29 and 31, ***Larson et al.*** discloses in Figure 1 a processor 76 including analyzing portion 74 which include a variation detection unit connected to the spectrum measurement unit (88) to measure a conveyance time, T1 and a shift amount change in E, wherein conveyance time, T1, is a time period from starting an irradiation measurement (SED) to convergence of a rise position of a subsequent measurement and change in E is the amount of energy, eV, during T1 (based on the irradiation of the electrons flowing with respect to time and with different energy levels is possible to determine the changed in energy based on time) and means (analyzing portion 74 or processor 76) for measuring a shape of low energy level secondary electron (SED) peaks in one of during ion irradiation and after ion irradiation wherein intensity, position and shape of the low energy level secondary electron peaks correlated with a capability of the insulating film to emit secondary electrons (With each irradiation of ions to the insulating film, the thickness of the film varies, therefore each irradiation of electrons will have and amount of energy different from the other, and this will be represented by a

graph in the monitor 78 showing a difference between secondary electrons based on time and kinetic energy allowing to determine a change in energy by comparing their peaks).

9. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over ***Larson et al. (US 5,315,113)***,***Wada et al. (US 5,723,367)*** and ***Hamamura et al. (US 6,303,932)*** in view of ***Fries (US 6,764,796).***

As to claim 28, the combination of ***Larson et al., Wada et al.*** and ***Hamamura et al.*** discloses everything above but fails to teach wherein the insulating film is MgO. However, ***Fries*** discloses in Figure 2 wherein the insulating film (35) is MgO.

It would have been obvious for one ordinary skill in the art at the time the invention was made to modify the combined teachings of ***Larson et al., Wada et al.*** and ***Hamamura et al.*** by having an insulating film of MgO as taught as ***Hamamura et al.*** to prevent damage to the substrate from ions and to allow the device to operate at lower voltages.

Response to Arguments

10. Applicant's arguments with respect to claims 1-10,13,14 and 26-31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arleen M. Vazquez whose telephone number is 571-272-2619. The examiner can normally be reached on Monday to Friday, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on 571-272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. M. V./

Examiner, Art Unit 2829

07/02/2008

/Ha T. Nguyen/

Supervisory Patent Examiner, Art Unit 2829